# **LANDSCAPING**

What plants do functionally and aesthetically are of inestimable value in the crowded contemporary urban environment. In addition to the more obvious, plants provide orientation that is frequently needed to visually navigate complex urban environments by enhancing roadway delineation, screening undesirable elements and separating incompatible land uses. They aid in conservation and management of soil and water resources to buffer dust, noise and glare. Plants make cities and highway corridors more enjoyable places by enhancing their visual quality and fit with surrounding community landscapes. They also can make highway corridors and parkways important places that people can enjoy within a community.

Early in the design process, the Aesthetic Committee recognized the opportunity that comprehensive landscape design offers to improve the visual character of the highway in relationship to its environmental setting. Initially, they focused on the natural qualities of the city that make Rochester a livable community. Visually distinct segments were identified that might support landscape development at different treatment levels. Members liked the intimacy of the I-35 Parkway in St Paul, and sought creative ways to offer a sense of that experience here. They disliked the appearance of standard grass turf along the roadway that requires regular mowing. What emerged was a design based upon the land and the rolling hills that surround the city.

Throughout the new highway corridor, Aesthetic Committee sought to create a parkway that would convey the spirit of the landscape setting present in the greater Rochester area during pre-settlement times. Thus, a treatment based upon short and tall grasses, interspersed with native plants was born...an ever changing kaleidoscope of brilliantly colored flowers and plumed grasses waiving in the wind. The new parkway will include prairie plants with such intriguing names as coneflower, compass plant, blazing star and big bluestem...and trees, such as maples, ash and oak. Other notable design distinctions that emerged include:

- Use of native, informal plantings along the roadways to improve views and promote a sense of ruralness and openness.
- Use of ornamental, formal plantings in the developed streetscape areas of the project
- Use of hardy plants that can tolerate the physical environments of their planting location, so that they can survive and grow to maturity
- Use of a variety of plant species to assure seasonal interest and effective

### blending

- Trees and shrubs planted along the roadway, clustered within interchange areas to represent Oak Savannah plant communities.
- Trees and shrubs planted in the developed streetscape areas of the project typical of that which one might expect in most mid-western communities
- •
- Vines planted along wall systems to reduce scale and size relationships, as well as to discourage graffiti
- Large boulevard trees planted along cross street bridges and frontage roads to create community oriented streetscapes
- Noise barriers landscaped to effect blending and to add visual quality in residential areas
- Wetland plant species planted around storm water ponds
- Installation of sprinkler irrigation systems whether on bridge structures or along wall systems to protect the landscape investment

To guide the landscape design process, the Committee members identified "Typical Landscape Treatment Types" and then applied these to a preliminary layout. See Figures 8-1 through 8-15. At an appropriate time, Mn/DOT designers will use this information to develop a preliminary planting plan for additional discussion with the City. A final landscaping plan that will complete the new Rochester parkway will be developed by the Corridor Development Unit in Mn/DOT's Office of Technical Support.

### **AESTHETIC DESIGN RECOMMENDATIONS**

### 8.1 Design Approach

This project resulted in a number of creative landscape design solutions as a result of the effort to balance the often-conflicting components that arise from transportation planning and design. One issue involved sight lines and the degree to which intersection areas could be safely planted both on and off bridge structures. The drawing results of a study conducted to resolve this issue are included in the Appendix of this Design Guide.

Perhaps one of the more interesting design concepts communicated by the Aesthetic Committee, was the concept of adding raised planters for trees and shrubs on the bridges of the 19<sup>th</sup> Street NW, 2<sup>nd</sup> Street SW and 6<sup>th</sup> Street SW street connections. First shown in the exhibits

of the environmental documents for this project, these planters are a critical part of the vision valued by the community for this new parkway project. Although all the details of these designs are not fully worked out, it is expected that the concepts presented herein can be achieved in what is expected to be a partnership effort between Mn/DOT and the City of Rochester. Because many of the landscaping features will result in wider bridge structures than normally required to meet requirements, considerable cost sharing should be anticipated by the City for the bridge design solutions recommended by the Aesthetic Committee.

Yet another design innovation was an agreement to reduce the width of the snow berm area to accommodate the linear vine planters shown on several drawings contained herein. See Figures 3-3, 3-4 and 3-4a. Within these planters, a sculptural vine support system is planned, similar in concept to those constructed recently on the I-35E Parkway in St Paul. Figures 8-16 through 8-18a illustrate the design.

### 8.2 Existing Vegetation

An assessment should be conducted early in the design process to prepare recommendations concerning right-of-way use, tree transplanting, tree and root system protection and mitigation for plant loss. Preserving and transplanting trees can be cost effective and yields the immediate visual advantage associated with large plants. To ensure this advantage requires the early involvement of those experienced in protecting and salvaging trees and large plants. Contact the District's Forester in Rochester's Design Office.

### 8.3 Plant Types

The plants used for highway landscaping can be grouped into six basic plant types: Canopy Trees, Evergreens, Half Trees, Shrubs, Ground Covers and Grasses and Wildflowers. Mn/DOT has developed data sheets for each of these plant types and organized them to illustrate some of the most frequently used design approaches on Minnesota's roadsides. The Committee used these sheets to communicate design preferences, as well as, to develop a *Conceptual Landscaping Treatment Plan* for the parkway. A copy of this plan can be obtained from the TH52 Corridor Manager. See Figures 8-1 through 8-15 listed below:

- Figure 8-1: Typical Landscape Treatment Type B
  - **Short Native Grass**
- Figure 8-2: Typical Landscape Treatment Type C
  - Tall Native Grasses and Wildflowers
- Figure 8-3: Typical Landscape Treatment Type E

Mixed Wetland Seedling and Seeding

Deciduous Vines on Fences Typical Landscape Treatment Type H *Figure 8-5:* Deciduous Vines on Walls *Figure 8-6:* Typical Landscape Treatment Type I **Boulevard Trees** *Figure 8-7:* Typical Landscape Treatment Type J **Deciduous Canopy Tree Massings** *Figure 8-8:* Typical Landscape Treatment Type M Large Deciduous Shrubs Figure 8-9: Typical Landscape Treatment Type J, L & M Informal Mixed Deciduous & Evergreen Trees and Shrubs Figure 8-10: Typical Landscape Treatment Type J, O & Q Mixed Deciduous Trees, Shrubs & Flowering Perennials Figure 8-11: Typical Landscape Treatment Type S **Urban Streetscapes** Figure 8-12: Typical Landscape Treatment Type O **Short Deciduous Shrubs** Figure 8-13: Typical Landscape Treatment Type P Short Evergreen Shrubs Figure 8-14: Typical Landscape Treatment Type Q Flowering Perennial & Groundcover Beds Figure 8-15: Typical Landscape Treatment Application The Aesthetic Committee applied Mn/DOT's Typical Landscape Treatment Type designations geographically to the parkway in the development of a conceptual landscaping treatment plan.

Typical Landscape Treatment Type G

*Figure 8-4:* 

Plant sizes for the landscaping of the parkway will be selected based on aesthetic objectives, horticultural requirements, funding availability and community recommendations. A full range of plant sizes will be used from seedlings to 2-1/2 inch caliper balled and burlapped deciduous trees. Larger sized plants will be used in accessible areas, in residential neighborhood areas and within areas requiring a more finished appearance at the time of planting.

### **8.5** Plant Selection

Whenever possible, designers should select plant communities and species native to southern Minnesota and the Rochester area. As indicated previously, the Committee expressed a preference for development of grassland and savanna habitat formation types. However, the over-riding factor in making plant selections should be plant species possessing medium to fast growth rates with proven tolerance to a wide range of environmental conditions and ability to survive with low maintenance. Mn/DOT's interactive CD-ROM expert system for selecting landscape plants for roadsides and landscapes should be used to make initial plant selections.

Designers should also consider the desires and capabilities of those responsible for the maintenance of the landscaping following installation. Mn/DOT's responsibility will be primarily limited to the area inside the fences, retaining walls and noise barriers constructed. Community responsibility generally will include the area at the interface between the highway right-of-way and the community, including street trees and boulevard grass mowing, site development and landscaping associated with the bridge planters and the trellis/vine planter system proposed along the base of several retaining walls.

### 8.6 Vine Planting

This project will make extensive use of vines within the parkway route. In particular, consider use of Boston Ivy, Riverbank Grape and Engleman Ivy. Each of these plant species has demonstrated superior tolerance to urban conditions (ie, pollution, salt, drought, heat, soil compaction, etc.) over a wide range of environmental conditions.

Vine planters should be developed as part of the special designs associated with the overcrossing bridges located at 19<sup>th</sup> Street NW, 2<sup>nd</sup> Street SW and 6<sup>th</sup> Street SW. The design intent is that vines be planted in all of the raised planters near the ornamental railing systems whether specifically labeled for vines or not. See Appendix for planter drawings.

Continuous vine planters should be developed at the base of the retaining walls located in the vicinity of the 19<sup>th</sup> Street NW, 2<sup>nd</sup> Street SW and 6<sup>th</sup> Street SW bridge crossings. Although they will not be planted continuously consistently, they should be constructed continuously beneath these bridge structures to provide aesthetic continuity along the route. See Figures 3-3, 3-4 and 3-4a for the design and location of these planters. This feature was added late in the aesthetic design process to reduce the dominance of the retaining walls for motorists using the parkway route through the addition of greenery and a sculptural vine trellis system. The details of the trellis system are illustrated in Figures 8-16 through 8-18a. Paint to match

Federal Standard 595B Color No. 14006 (Forest Green).

*Figure 8-16: Design Inspiration* The experimental trellis support system constructed on St Paul's I-35E Parkway served as the design inspiration for the vine planter designs on this project.

*Figure 8-17: Vine Planter Trellis* The "rolling hills" design theme of the signature bridge railing system developed for the 2<sup>nd</sup> Street SW and 6<sup>th</sup> Street SW bridge crossings served as the design inspiration for the trellis system recommended by the Aesthetic Committee.

Figure 8-18 and 18a: Design Visualization Design visualizations are an important tool to exploring alternative treatment recommendations and relationships.

### 8.7 Interchange Planting

Interchanges can function as local landmarks or gateways to neighborhoods or communities. They are often the motorist's first introduction to a community neighborhood when leaving a highway corridor. Recognizing this potential, interchanges are often planted more heavily within the parkway, than along the remainder of a highway route. As an integral component of the parkway design theme, the Aesthetic Committee recommended heavier and more planting in and around the "heart-of-the-city" bridges at 2<sup>nd</sup> Street SW and 6<sup>th</sup> Street SW.

*Figures 8-19: Interchange Planting* Preliminary drawing by Mn/DOT illustrating the recommended landscaping concept for the 19<sup>th</sup> Street NW Interchange.

*Figure 8-20: Design Visualization* To help find an appropriate design solution at 19<sup>th</sup> Street NW, Mn/DOT's Visualization Unit prepared design drawings such as this, illustrating Aesthetic Committee design preferences. See Appendix for complete drawing set.

### **8.8** Street Tree Planting

Trees are the most prominent design element capable of linking together an entire city. Bands of large deciduous shade trees can achieve this coherence by establishing an ordered continuity of trunk spacing and branch texture. In the heart of the corridor, the landscaping proposed along many city streets and frontage roads will consist of exclusively of canopy trees, which will line these routes. Inadequate rooting space can be one of the more important factors in the premature mortality of trees in urban areas. To maximize opportunities to avoid unnecessary limitations upon healthy tree growth and development, designers should analyze visual issues and relationships that influence aesthetic design <u>before</u> city street and frontage road alignments are finalized.

*Figure 8-21: Existing Visual Character* The existing streetscape in the vicinity of Rochester's Miracle Mile retail complex lacks the appearance of a quality landscape environment that supports larger city development goals.

Figure 8-22: Street Tree Planting Artist sketch by LSA Design Inc. illustrating proposed landscape design concept in the vicinity of Rochester's Miracle Mile retail complex.

### 8.9 Noise Barrier Planting

Whenever possible, plants should be located on both sides of noise barriers to soften and screen long wall expanses, reduce scale and provide visual interest. Plant massing should be provided at the ends of noise barriers to blend them into the landscape setting. To avoid missed opportunities for landscape development, designers should analyze visual issues and relationships that influence aesthetic design <u>before</u> barrier alignments are finalized.

### 8.10 Median Planting

At several bridge crossings both on and off structure median planters have been recommended by the Aesthetic Committee. See drawings in the Appendix for details. These planters should be gently mounded and include both drainage and sprinkler irrigation systems. A stone or brick paver surround should be specified to protect plants located therein from vehicle damage, as well as, from winter salt damage from melting snow piles. The City of Rochester has incorporated this design on several local streets in its downtown area with good success. Contact Rochester's City Forester for more information.

*Figure 8-23: Median Planting* Plants and decorative paving materials add to the visual appeal of urban streetscapes when placed in median planters.

### 8.11 Seeding and Sodding

All disturbed areas should be seeded or sodded following construction according to Mn/DOT's construction practices and specifications for erosion control and turf establishment. Special consideration should be made for the inclusion of native grass and wildflower mixtures along the roadways to improve the sense of ruralness and openness. Within this area, highlight select areas with color theme by increasing the proportion of forbs to grasses with a particular flower species or multiple forbs of a particular color. The design intent is to emulate an oak savannah plant community. Contact Mn/DOT's Corridor Development for additional details.

Turf grass generally should be specified in the developed streetscape areas of the project and should be used on a limited basis elsewhere along the mainline highway route.



### **SHORT NATIVE GRASS**

### **PURPOSE**

Keep Desirable Views Open while providing Diversity, Color, Erosion Control, and Reduced Maintenance Costs

### **SUGGESTED SPECIES**

Native Grass Mix: little bluestem, wheat-grass, gramma grasses, Canada wild-rye, dropseeds buffalo grass, june grass
Wildflower Mix: aster, bergamot, vervain, purple coneflower, alumroot, blazingstar, iris,

goldenrod, black-eyed susan, prairie clover

seed, seedlings

Figure 8-1: Typical

Landscape Treatment Type B

### APPROX. SIZE & SPACING

seed, seedlings





# **TALL NATIVE GRASSES AND WILDFLOWERS**

### **PURPOSE**

To Recreate or Maintain naturally occuring Structural Diversity, Reduce Maintenance Costs, Provide Color, Wildlife Habitat, Preserve Vanishing Native Species

### SUGGESTED SPECIES

big bluestem, switch grass, indian grass Seed, Seedlings little bluestem, dropseeds, coneflowers, blazing stars, compass plant, golden alexander, goldenrods, sunflowers, asters, prairie smoke, etc.

### **APPROX. SIZE & SPACING**



Figure 8-2: Typical Landscape Treatment Type C



# TYPICAL LANDSCAPE CORRIDOR TREATMENT CONCEPTUAL VEGETATION TYPES



# MIXED WETLAND SEEDLING AND SEEDING

### PURPOSE

Restoration and recreation of wetlands for mitigation. Erosion prevention, improved water quality, enhanced wildlife habitat, establishment of biodiversity of plant life

### SUGGESTED SPECIES

Deciduous trees: cottonwoods, ash, swamp white oak, willow, elm, etc. Deciduous shrubs: alder, willow, elder, spirea, dogwood.
Native seed: grasses, wildflowers, trees, shrubs

### **APPROX. SIZE & SPACING**

3'-10' Ht. Variable O.C. 18"-2' Ht. 3-5' O.C.



Figure 8-3: Typical Landscape Treatment Type E



## **DECIDUOUS VINES ON FENCES**

### PURPOSE

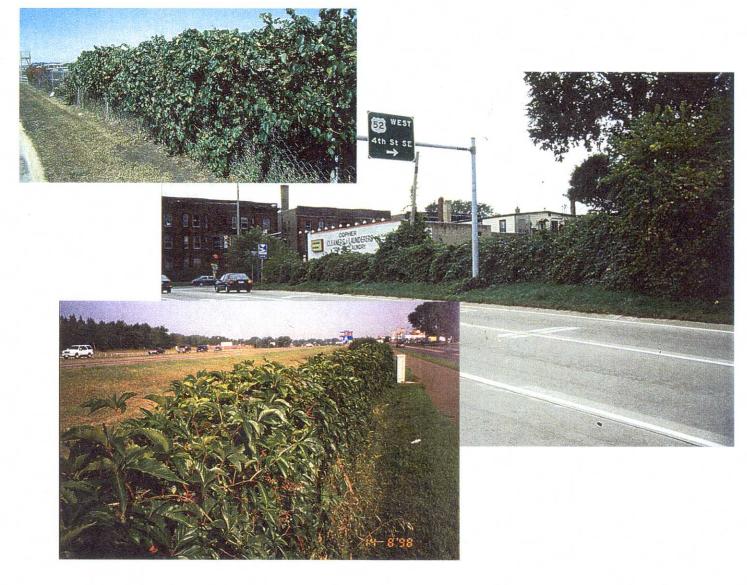
Soften and Screen Fences in Narrow Areas Close in Proximity to Traffic Lanes

### SUGGESTED SPECIES

Vines: engelman or woodbine ivy, bittersweet, grape ivy

### **APPROX. SIZE & SPACING**

2 Yr. #1 5'-15' O.C.



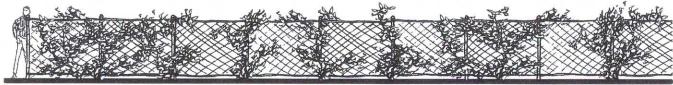


Figure 8-4: Typical Landscape Treatment Type G

# TYPICAL LANDSCAPE CORRIDOR TREATMENT CONCEPTUAL VEGETATION TYPES



# **DECIDUOUS VINES ON WALLS**

### PURPOSE

Soften and screen walls in narrow areas close in proximity to traffic lanes.

### **SUGGESTED SPECIES**

Vines:

engelmen or woodbine ivy, bittersweet, grape ivy.

### APPROX. SIZE & SPACING

2 yr. #1 5' - 10' O.C.



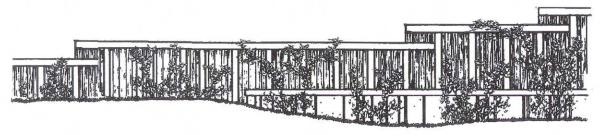
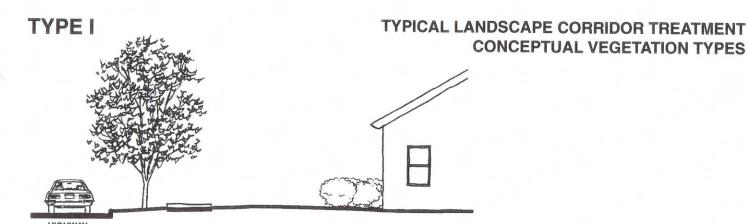


Figure 8-5: Typical Landscape Treatment Type H



## **BOULEVARD TREES**

### **PURPOSE**

Provide canopy and variable screening for safety and sign visibility, create a linear formality, create human scale, preserve open viewing

### SUGGESTED SPECIES

Boulevard Trees: honeylocust, oak ash, norway maple, hackberry, etc.

### **APPROX. SIZE & SPACING**

2"-2.5" Cal. 20' - 50' O.C.

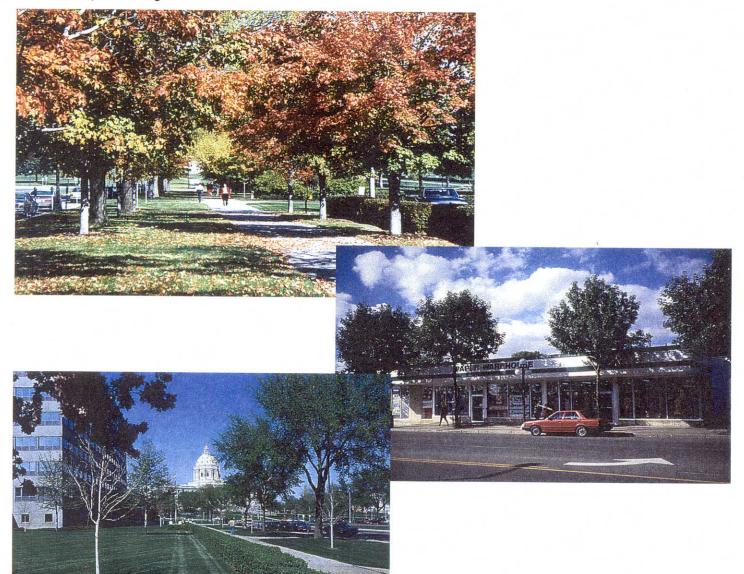


Figure 8-6: Typical Landscape Treatment Type I



# TYPICAL LANDSCAPE CORRIDOR TREATMENT CONCEPTUAL VEGETATION TYPES

# **DECIDUOUS CANOPY TREE MASSINGS**

### **PURPOSE**

Large, Natural Appearing Plant Masses to provide Softening and Spatial Enclosure, Keep Desireable Views Open under the Canopy

### **SUGGESTED SPECIES**

oak, ash, poplar, maple, linden, hackberry, gingko, elm, coffeetree, honeylocust

### **APPROX. SIZE & SPACING**

1"-2" Cal. 10'-50' O.C.



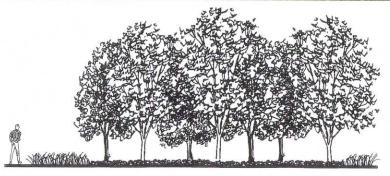


Figure 8-7: Typical Landscape Treatment Type J



# TYPICAL LANDSCAPE CORRIDOR TREATMENT CONCEPTUAL VEGETATION TYPES



# LARGE DECIDUOUS SHRUBS

### **PURPOSE**

Tall screening in narrow areas where safety standards prohibit trees or where reduced maintenance levels are required.

### SUGGESTED SPECIES

Large Shrubs: amur maple, lilac, buffaloberry, viburnum, dogwood, ninebark, honeysuckle, vanhoutte spirea, etc.

### **APPROX. SIZE & SPACING**

18" - 2' Ht. 4' - 5 ' O.C.

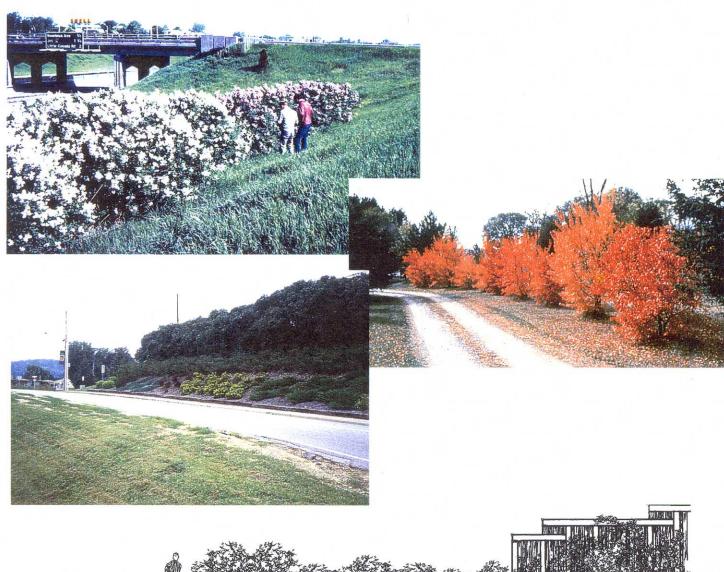
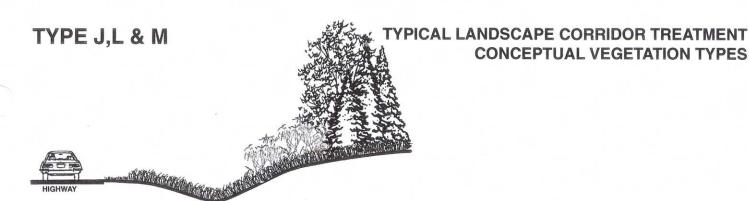




Figure 8-8: Typical Landscape Treatment Type M



## **INFORMAL MIXED DECIDUOUS & EVERGREEN TREES & SHRUBS**

### **PURPOSE**

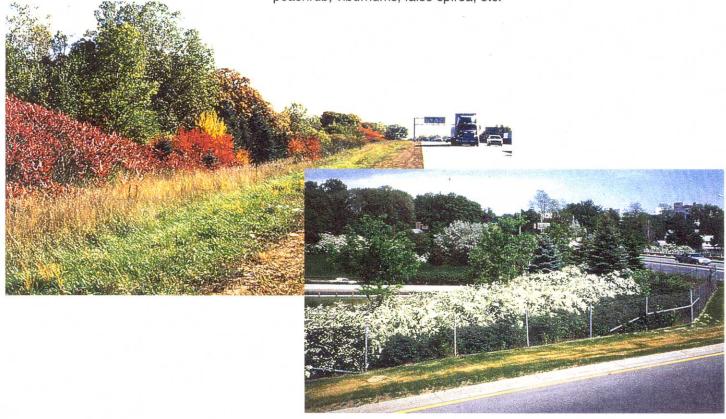
Large, Natural Appearing Plant Masses to provide Softening, Screening, Diversity, Habitat, Visual Impact, and Winter Interest with Reduced Maintenance Levels, Evergreens add Winter Color and Wildlife Refuge

### SUGGESTED SPECIES

Deciduous Trees: oak, ash, poplar, maple, hackberry, elm, honeylocust Evergreens: spruce, Austrian and ponderosa pines, red cedar, etc.
Ornamental Trees: hawthorn, plum, tree lilac, Amur maple, chokecherry, crabapples, etc.
Large Shrubs: sumac, buffaloberry, junipers, Amur maple, dogwood, lilac, plum, hazelnut, peashrub, viburnums, false spirea, etc.

### **APPROX. SIZE & SPACING**

18" Seedling-1.5" Cal. Variable O.C. 3'-6' Ht. 10'-20' O.C. 6' Ht.-1.5" Cal. 8'-20' O.C. 18"-2' Ht. 4'-6' O.C.



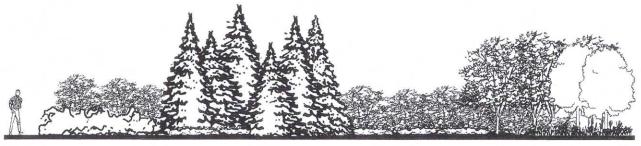
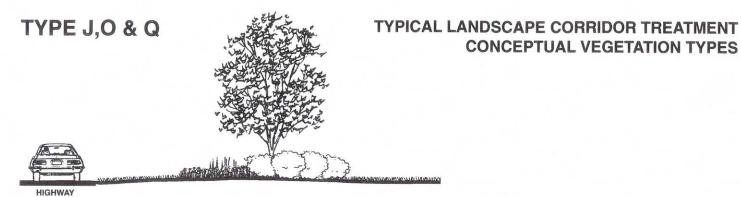


Figure 8-9: Typical Landscape Treatment Type J, L &M



# MIXED DECIDUOUS TREES, SHRUBS & FLOWERING PERENNIALS

### PURPOSE

Low Plant Masses to provide Softening and Interest in more Formal Areas while keeping Desirable Views Open, Higher Levels of Maintenance are Required

### SUGGESTED SPECIES

Perennials: daylilies, wildflowers

Deciduous Trees: hybrid poplar, ash, oak maple, hackberry, elm, honeylocust, etc.
Ornamental Trees: hawthorn, plum, tree lilac, Amur maple, crabapples, etc.
Low Shrubs: spireas, potentilla, junipers, lilac, dwarf bush honeysuckle, etc.

### APPROX. SIZE & SPACING

1.5"-2.5" Cal. Variable O.C. 6' Ht.-1.5" Cal. 8'-15' O.C. 18"-2' Ht. 4'-6' O.C. Seed-1 Gal. Pot 6"-2' O.C.





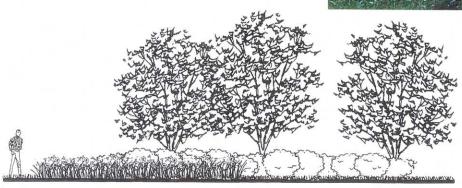


Figure 8-10: Typical Landscape Treatment Type J, O & Q

### **URBAN STREETSCAPES**

### **PURPOSE**

Creates human scale, filters pollution, reduces energy consumption, provides wildlife habitat, and enhances livability.

### SUGGESTED SPECIES

Deciduous trees: ginkgo, linden ash, honeylocust, oak, hackberry, elm, etc.
Ornamental Trees: Amur maple, tree lilac, crabapple, hawthorn, plum, etc.
Low shrubs: spirea, potentilla, rose, dwarf bush honeysuckle, lilac, junipers, etc.
Perennials, daylilies, wildflowers, annuals.

### **APPROX. SIZE & SPACING**

1.5" - 2.5" Cal. Variable O.C. 6' Ht. - 1.5" Cal. 8' - 15' O.C. 18" - 2' Ht. 3' - 5' O.C. Seed - 1 Gal. Pot 6" - 2' O.C.

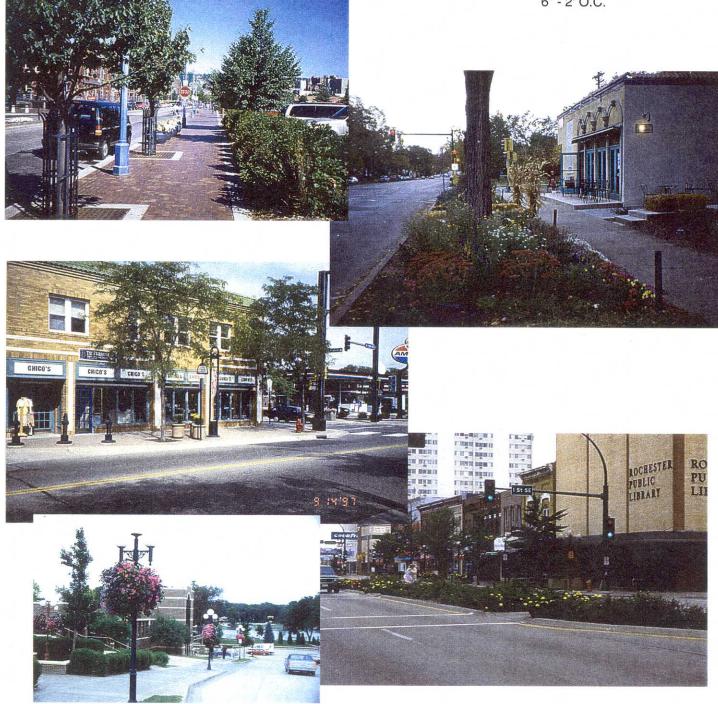
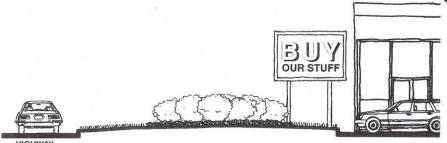


Figure 8-11: Typical Landscape Treatment Type S

### TYPE O

# TYPICAL LANDSCAPE CORRIDOR TREATMENT CONCEPTUAL VEGETATION TYPES



### SHORT DECIDUOUS SHRUBS

### **PURPOSE**

Shortness of shrubs allows visibility to signs, businesses and sight corners, flowers add color, used where safety is a concern, formal appearance, provides softening in hardscape areas.

### SUGGESTED SPECIES

Shrubs: potentilla, spirea, barberry, dwarf ninebark, compact amur maple, small shrub roses, dwarf bush-honeysuckle.

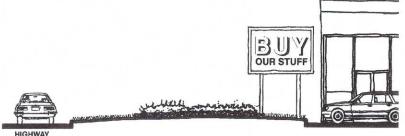
### **APPROX. SIZE & SPACING**

12" = 19" Ht. 3' - 5' O.C.





Figure 8-12: Typical Landscape Treatment Type O



### SHORT EVERGREEN SHRUBS

### **PURPOSE**

Shortness of shrubs allows visibility of signs, businesses and sight corners, used where safety is a concern, vear round color, formal appearance, provides softening in hardscape areas

### **SUGGESTED SPECIES**

Shrubs: low spreading junipers, cypress yucca, globe arborvitae, and japanese spurge

### **APPROX. SIZE & SPACING**

12" = 18" Ht. 3' - 5' O.C.



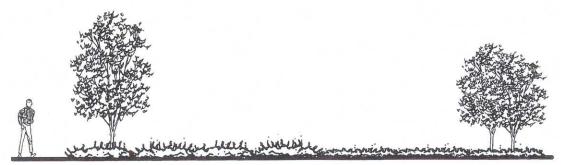


Figure 8-13: Typical Landscape Treatment Type P

# TYPICAL LANDSCAPE CORRIDOR TREATMENT CONCEPTUAL VEGETATION TYPES



# FLOWERING PERENNIAL & GROUNDCOVER BEDS

### **PURPOSE**

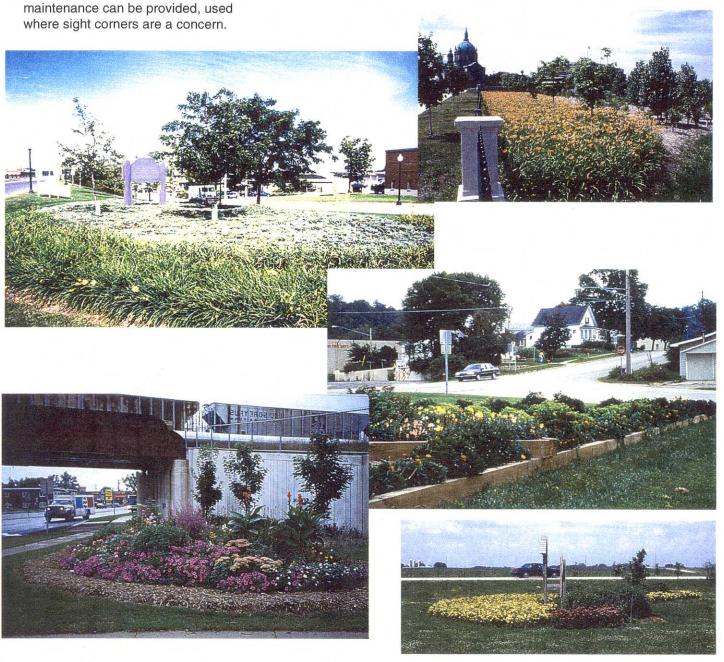
Provide color, interest, and softening in areas where higher levels of maintenance can be provided, used where sight corners are a concern

### SUGGESTED SPECIES

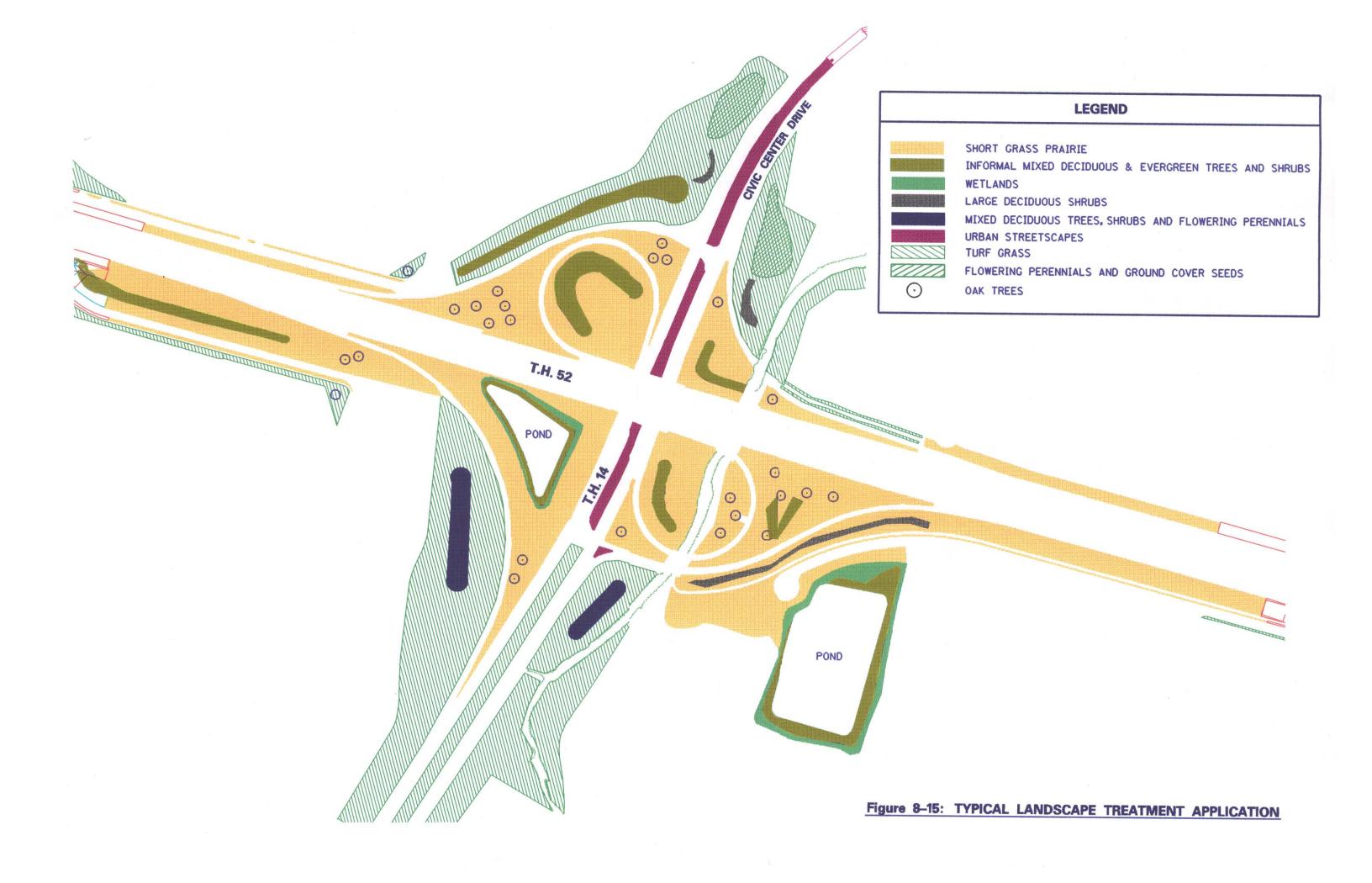
Perennials & Groundcovers: daylilies, wildflowers

### **APPROX. SIZE & SPACING**

Qt. Container











Riverbank Grape Vine

*Figure 8-16: Design Inspiration* Experimental vine trellis structures installed on St. Paul's I-35E Parkway served as the design inspiration for the trellis structures of this project.



# **Motorist View of Vine Planter Trellis System**



# TH 14/52 Rochester, MN

Image Produced by Visualization Unit in Cooperation with Mn/DOT's Site Development and Rochester District, Final Design. November, 2001

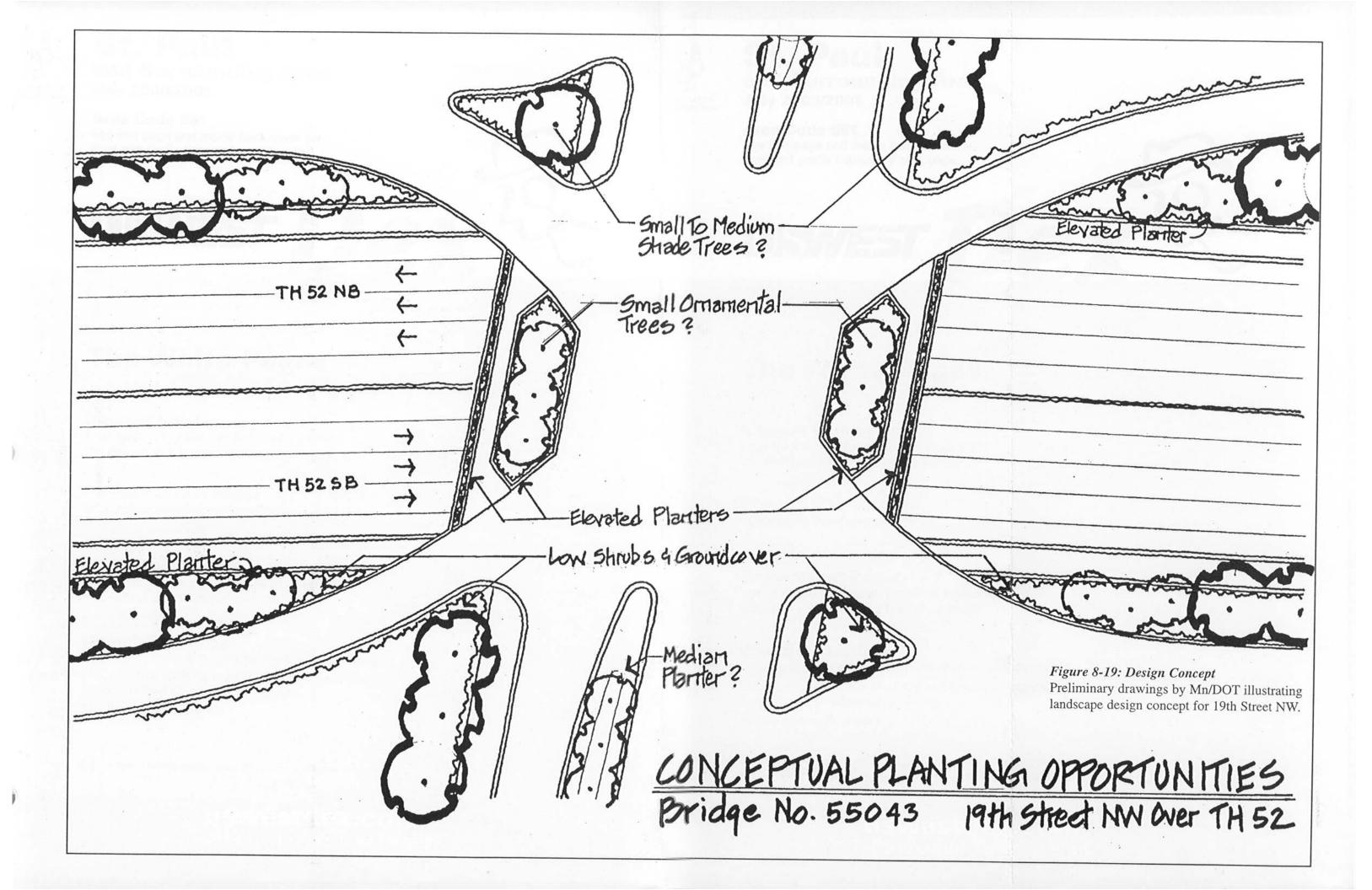


**Motorist View of Vine Planter Trellis System** 



# TH 14/52 Rochester, MN

Image Produced by Visualization Unit in Cooperation with Mn/DOT's Site Development and Rochester District, Final Design. November, 2001





# TH 14/52 Rochester, MN

Pedestrian View Westbound Along 19th Street NW



Computer Simulation
Produced by Visualization Unit
in Cooperation with Mn/DOT's Rochester District, Final Design March 15, 2001



*Figure 8-21: Existing Visual Character* The existing streetscape in the vicinity of Rochester's Miracle Mile retail complex lacks the appearance of a quality landscape environment that supports larger city development goals.



*Figure 8-22: Street Tree Planting* Artist Sketch by LSA Design, Inc. illustration proposed landscape design concept in the vicinity of Rochester's Miracle Mile retail complex.



Examples of streetscape median landscape treatment



*Figure 8-23 Median Planting*Plants and decorative paving materials add to the visual appeal of urban streetscapes when placed in median planters